

## **CLAIMS**

### **AMENDED CLAIMS:**

Please amend the claims as follows:

1. (currently amended) A method in a data processing system having a plurality of patterns, wherein each of the plurality of patterns has an associated element type, the method comprising the steps of:

receiving an indication of an element type, wherein the element type is a class,

link, or any known object-oriented component of a software program;

displaying a matching one of the plurality of patterns, the matching pattern having

an associated element type that matches the received element type;

receiving from a user an indication of a selection of the matching pattern;

receiving an indication of a variation;

modifying the matching pattern based on the variation;

receiving an identification of a language; and

generating software code reflecting the modified matching pattern, wherein the

software code is generated in the language.

2. (original) The method of claim 1 further comprising the step of determining whether the variation is suitable for the matching pattern before modifying the matching pattern.

3. (original) The method of claim 1, further comprising the step of storing identification information for the matching pattern in a comment associated with the generated software code.

4. (original) The method of claim 1, wherein the step of generating includes the steps of determining a location for storing the generated software code and storing the generated software code at the location.

5. (currently amended) A method in a data processing system comprising the steps of:

receiving an indication of a pattern, wherein the pattern is chosen from a list of

patterns for software architecture that match an element type;

receiving an indication of a variation;

modifying the pattern based on the variation; and

generating software code reflecting the modified pattern.

6. (original) The method of claim 5 further comprising the step of determining whether the variation is suitable for the pattern before modifying the pattern.

7. (original) The method of claim 5, wherein the generating step further comprises the step of receiving an indication of a language, wherein the software code is generated in the language.

8. (original) The method of claim 5, further comprising the step of storing identification information for the pattern in a comment associated with the generated software code.

9. (original) The method of claim 5, wherein the step of generating includes the steps of determining a location for storing the generated software code and storing the generated software code at the location.

10. (currently amended) A method in a data processing system comprising the steps of:  
receiving an indication of a pattern, wherein the pattern is chosen from a list of patterns that match a given element;  
generating software code reflecting the pattern; and  
storing identification information for the pattern in a comment associated with the generated software code.

11. (original) The method of claim 10, further comprising the steps of:  
receiving a variation for the pattern; and  
modifying the pattern based on the variation before generating the source code reflecting the modified pattern.

12. (original) The method of claim 11, further comprising the step of determining whether the variation is suitable for the pattern before modifying the pattern.

13. (original) The method of claim 10, wherein the generating step further comprises the step of receiving an indication of a language, wherein the software code is generated in the language.

14. (original) The method of claim 10, wherein the step of generating includes the steps of determining a location for storing the generated software code and storing the generated software code at the location.

15. (currently amended) A method in a data processing system having a pattern, wherein the pattern has a first participant playing a first role in the pattern and a second participant playing a second role in the pattern, the method comprising the steps of:

receiving an indication of a first of a plurality of software elements, wherein the first of the plurality of software elements is a substantiation of an element type;

determining whether the first software element is capable of playing the first role; when it is determined that the first software element is capable of playing the first role,

determining whether a second of the plurality of software elements is capable of playing the second role, wherein the second of the plurality of software elements is a substantiation of an element type;

when it is determined that the second software element is capable of playing the second role,

designating that the first software element plays the first role in the pattern; and

designating that the second software element plays the second role in the pattern.

16. (original) The method of claim 15, further including the step of, when it is determined that the second software element is not capable of playing the second role, designating that a missing participant plays the second role in the pattern.

17. (original) The method of claim 15, wherein the step of designating the first software element includes the steps of:

detecting a portion of the first software element; and  
replacing the portion of the first software element with at least a portion of the first participant.

18. (original) The method of claim 15, further comprising the steps of:

receiving an indication of a variation for the first participant; and  
modifying the first participant with the variation before the first software element is designated to play the first role in the pattern.

19. (original) The method of claim 18, further comprising the steps of:

receiving an indication of a second variation for the second participant; and  
modifying the second participant with the second variation before the second software element is designated to play the second role of the pattern.

20. (original) The method of claim 15, further comprising the step of storing identification information for the pattern in a comment associated with the software code.

21. (currently amended) A method in a data processing system having a pattern, wherein the pattern has a participant playing a role in the pattern, the method comprising the steps of:

receiving an indication of a software element, wherein the software element is a substantiation of an element type;  
determining whether the software element is capable of playing the role; and  
when it is determined that the software element is capable of playing the role,

designating that the software element plays the role in the pattern.

22. (original) The method of claim 21, further including the step of, when it is determined that the software element is not capable of playing the role, designating that a missing participant plays the role in the pattern.

23. (original) The method of claim 21, wherein the step of designating includes the steps of:

detecting a portion of the software element; and

replacing the portion of the software element with at least a portion of the participant.

24. (original) The method of claim 21, further comprising the steps of:

receiving an indication of a variation for the participant; and

modifying the participant with the variation before the software element is designated to play the role in the pattern.

25. (original) The method of claim 21, further comprising the step of storing identification information for the pattern in a comment associated with the code.

26. (original) The method of claim 21, wherein the participant is one of a plurality of participants.

27. (currently amended) A method in a data processing system for creating a pattern having a first participant with a first role name, and a second participant with a second role name, wherein the pattern is based on code having a first software element with a

first coded name and a second software element with a second coded name, the method comprising the steps of:

receiving an indication of the first software element, wherein the first software element is a substantiation of an element type;

receiving an indication that the first software element corresponds to the first participant;

replacing the first coded name of the first software element with the first role name of the first participant;

receiving an indication of the second software element, wherein the second software element is a substantiation of an element type;

receiving an indication that the second software element corresponds to the second participant;

replacing the second coded name of the second software element with the second role name of the second participant; and

storing the code with the first coded name and the second coded name as the pattern.

28. (currently amended) A method in a data processing system comprising the steps of:

displaying a plurality of software elements to a user, wherein the software elements are substantiations of element types;

receiving an indication of a selected one of the plurality of software elements;

receiving an indication of a user-defined pattern role that the selected software element plays in a pattern; and

storing the plurality of software elements as the pattern.

29. (currently amended) A computer-readable medium containing instructions for controlling a data processing system to perform a method, the data processing system having a plurality of patterns, wherein each of the plurality of patterns has an associated element type, the method comprising the steps of:

receiving an indication of an element type, wherein the element type is a class,

link, or any known object oriented component of a software program;

displaying a matching one of the plurality of patterns, the matching pattern having

an associated element type that matches the received element type;

receiving from a user an indication of a selection of the matching pattern;

receiving an indication of a variation;

modifying the matching pattern based on the variation;

receiving an identification of a language; and

generating software code reflecting the modified matching pattern, wherein the

software code is generated in the language.

30. (original) The computer-readable medium of claim 29, wherein the method further comprises the step of determining whether the variation is suitable for the matching pattern before modifying the matching pattern.

31. (original) The computer-readable medium of claim 29, wherein the method further comprises the step of storing identification information for the matching pattern in a comment associated with the generated software code.



32. (original) The computer-readable medium of claim 29, wherein the step of generating includes the steps of determining a location for storing the generated software code and storing the generated software code at the location.

33. (currently amended) A computer-readable medium containing instructions for controlling a data processing system to perform a method, the data processing system, the method comprising the steps of:

receiving an indication of a pattern, wherein the pattern is chosen from a list of

patterns for software architecture that match an element type;

receiving an indication of a variation;

modifying the pattern based on the variation; and

generating software code reflecting the modified pattern.

34. (original) The computer-readable medium of claim 33, wherein the method further comprises the step of determining whether the variation is suitable for the pattern before modifying the pattern.

35. (original) The computer-readable medium of claim 33, wherein the generating step further comprises the step of receiving an indication of a language, wherein the software code is generated in the language.

36. (original) The computer-readable medium of claim 33, wherein the method further comprises the step of storing identification information for the pattern in a comment associated with the generated software code.

37. (original) The computer-readable medium of claim 33, wherein the step of generating includes the steps of determining a location for storing the generated software code and storing the generated software code at the location.

38. (currently amended) A computer-readable medium containing instructions for controlling a data processing system to perform a method, the data processing system, the method comprising the steps of:

receiving an indication of a pattern, wherein the pattern is chosen from a list of patterns for software architecture that match an element type;  
generating software code reflecting the pattern; and  
storing identification information for the pattern in a comment associated with the generated software code.

39. (original) The computer-readable medium of claim 38, wherein the method further comprises the steps of:

receiving a variation for the pattern; and  
modifying the pattern based on the variation before generating the source code reflecting the modified pattern.

40. (original) The computer-readable medium of claim 39, wherein the method further comprises the step of determining whether the variation is suitable for the pattern before modifying the pattern.

41. (original) The computer-readable medium of claim 38, wherein the generating step further comprises the step of receiving an indication of a language, wherein the software code is generated in the language.

42. (original) The computer-readable medium of claim 38, wherein the step of generating includes the steps of determining a location for storing the generated software code and storing the generated software code at the location.

43. (currently amended) A computer-readable medium containing instructions for controlling a data processing system to perform a method, the data processing system having a pattern, wherein the pattern has a first participant playing a first role in the pattern and a second participant playing a second role in the pattern, the method comprising the steps of:

receiving an indication of a first of a plurality of software elements, wherein the first of the plurality of software elements is a substantiation of an element type;

determining whether the first software element is capable of playing the first role; when it is determined that the first software element is capable of playing the first role,

determining whether a second of the plurality of software elements is capable of playing the second role, wherein the second of the plurality of software elements is a substantiation of an element type;

when it is determined that the second software element is capable of playing the second role,

designating that the first software element plays the first role in the pattern; and

designating that the second software element plays the second role in the pattern.

44. (original) The computer-readable medium of claim 43, wherein the method further includes the step of, when it is determined that the second software element is not capable of playing the second role, designating that a missing participant plays the second role in the pattern.

45. (original) The computer-readable medium of claim 43, wherein the step of designating the first software element includes the steps of:

- detecting a portion of the first software element; and
- replacing the portion of the first software element with at least a portion of the first participant.

46. (original) The computer-readable medium of claim 43, wherein the method further comprises the steps of:

- receiving an indication of a variation for the first participant; and
- modifying the first participant with the variation before the first software element is designated to play the first role in the pattern.

47. (original) The computer-readable medium of claim 46, wherein the method further comprises the steps of:

- receiving an indication of a second variation for the second participant; and
- modifying the second participant with the second variation before the second software element is designated to play the second role of the pattern.

48. (original) The computer-readable medium of claim 43, wherein the method further comprises the step of storing identification information for the pattern in a comment associated with the software code.

49. (currently amended) A computer-readable medium containing instructions for controlling a data processing system to perform a method, the data processing system having a pattern, wherein the pattern has a participant playing a role in the pattern, the method comprising the steps of:

receiving an indication of the software element, wherein the software element is a substantiation of an element type;

determining whether the software element is capable of playing the role; and  
when it is determined that the software element is capable of playing the role,  
designating that the software element plays the role in the pattern.

50. (original) The computer-readable medium of claim 49, wherein the method further includes the step of, when it is determined that the software element is not capable of playing the role, designating that a missing participant plays the role in the pattern.

51. (original) The computer-readable medium of claim 49, wherein the step of designating includes the steps of:

detecting a portion of the software element; and  
replacing the portion of the software element with at least a portion of the  
participant.

52. (original) The computer-readable medium of claim 49, wherein the method further comprises the steps of:

receiving an indication of a variation for the participant; and  
modifying the participant with the variation before the software element is  
designated to play the role in the pattern.

53. (original) The computer-readable medium of claim 49, wherein the method further comprises the step of storing identification information for the pattern in a comment associated with the code.

54. (original) The computer-readable medium of claim 49, wherein the participant is one of a plurality of participants.

55. (currently amended) A computer-readable medium containing instructions for controlling a data processing system to perform a method, the data processing system having a pattern having a first participant with a first role name, and a second participant with a second role name, wherein the pattern is based on code having a first software element with a first coded name and a second software element with a second coded name, the method comprising the steps of:

receiving an indication of the first software element, wherein the first software element is a substantiation of an element type;

receiving an indication that the first software element corresponds to the first participant;

replacing the first coded name of the first software element with the first role name of the first participant;

receiving an indication of the second software element, wherein the second software element is a substantiation of an element type;

receiving an indication that the second software element corresponds to the second participant;

replacing the second coded name of the second software element with the second role name of the second participant; and

storing the code with the first coded name and the second coded name as the pattern.

56. (currently amended) A computer-readable medium containing instructions for controlling a data processing system to perform a method, the data processing system, the method comprising the steps of:

displaying a plurality of software elements to a user, wherein the software elements are substantiations of element types;

receiving an indication of a selected one of the plurality of software elements;

receiving an indication of a user-defined pattern role that the selected software element plays in a pattern; and

storing the plurality of software elements as the pattern.

57. (currently amended) A data processing system comprising:

a memory device further comprising a program that receives an indication of a pattern for software architecture, that receives an indication of a variation,

that modifies the pattern based on the variation, and that generates  
software code reflecting the modified pattern; and  
a processor for running the program.

58. (original) The data processing system of claim 57, wherein the program further  
determines whether the variation is suitable for the pattern before modifying the pattern.

59. (original) The data processing system of claim 57, wherein the program receives an  
indication of a language and generates the software code in the language.

60. (original) The data processing system of claim 57, wherein the program further stores  
identification information for the pattern in a comment associated with the generated  
software code.

61. (original) The data processing system of claim 57, wherein the program determines a  
location for storing the generated software code and stores the generated software code at  
the location.

62. (currently amended) A data processing system comprising:

a memory device further comprising:

a pattern for software architecture having a participant playing a role in the  
pattern; and



a program that receives an indication of the software element, that determines whether the software element is capable of playing the role, and when it is determined that the software element is capable of playing the role, that designates that the software element plays the role in the pattern; and a processor for running the program.

63. (original) The data processing system of claim 62, wherein the program, when it is determined that the software element is not capable of playing the role, designates that a missing participant plays the role in the pattern.

64. (original) The data processing system of claim 62, wherein when designating, the program detects a portion of the software element, and replaces the portion of the software element with at least a portion of the participant.

65. (original) The data processing system of claim 62, wherein the program further receives an indication of a variation for the participant, and modifies the participant with the variation before the software element is designated to play the role in the pattern.

66. (original) The data processing system of claim 62, wherein the program further stores identification information for the pattern in a comment associated with the code.

67. (original) The data processing system of claim 62, wherein the participant is one of a plurality of participants.

68. (currently amended) A data processing system comprising:

a memory device further comprising a program that displays a plurality of software elements to a user, wherein the software elements are substantiations of element types, receives an indication of a selected one of the plurality of software elements, receives an indication of a user-defined pattern role that the selected software element plays in a pattern, and stores the plurality of software elements as the pattern; and  
a processor for running the program.

69. (currently amended) A system comprising:

means for receiving an indication of a pattern, wherein the pattern is chosen from a list of patterns for software architecture that match an element type;  
means for generating software code reflecting the pattern; and  
means for storing identification information for the pattern in a comment associated with the generated software code.

70. (currently amended) A method in a data processing system having source code, the method comprising the steps of:

detecting in the source code a first pattern for software architecture; and  
replacing the first pattern with a second pattern that is different than the first pattern.